Chemical Age

VOL. 82 No. 2107

11 July 1959

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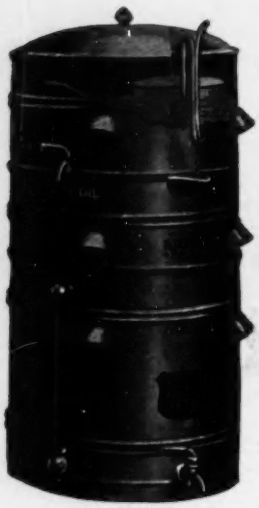

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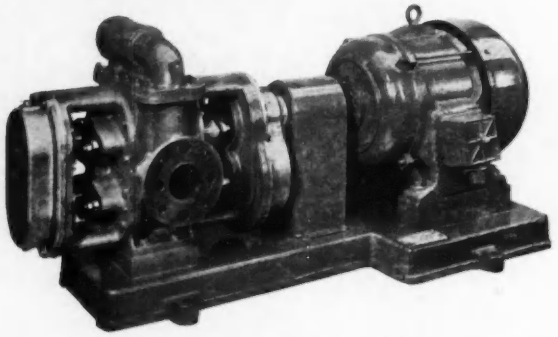
PUMP MAKERS and ENGINEERS



All Stainless Steel Rotary Pump with incorporated Relief Valve, Superimposed Remote Bearings, Reduction Gearbox and back gears with direct motor drive, for handling viscous liquids.

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Tantiron, the registered trade name applied to Silicon Iron Castings, was first cast and produced on a commercial scale by The Lennox Foundry Co. before 1910, so we are well justified in our claim that it is the first—and still the best—high silicon resisting iron.

Tantiron is manufactured into Pumps, Valves, Dephlegmators, Pipes, Cocks, Absorption Towers, Pans, Reaction Vessels, Coolers, etc.

Tantiron resists most of the known persistent corrosive agents.

Tantiron Pipes, Valves and Fittings are subject to a hydraulic test before despatch and test certificates furnished when requested.

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Bet you my Dad's factory uses more acetone than your Dad's.

Bet you it doesn't! My Dad's factory
uses simply tons and tons and tons of acetone.
And it all comes from Shell Chemical, so there!

Golly! My Dad's acetone comes from Shell, too.
I say . . . like a bullseye?

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The first of the new series available is:—

ETHOMEEN C/25

Structural formula: $R.N \begin{cases} (C_2H_4O)_xH \\ (C_2H_4O)_yH \end{cases}$

where R denotes the coco fatty acid radical and $x+y=15$.

Average Molecular weight:	**875**
Appearance at 25°C:	**Dark liquid**
Specific Gravity at 25°C/25°C:	**1.042**
Solubility:	**In all proportions with water, benzol, acetone and isopropanol at 25°C.** Partially soluble in carbon tetrachloride and other solvents.

Chemically the Ethomeens are tertiary amines and form quaternary and other salts. Because the hydrophilic moiety of Ethomeen C/25 consists of 15 ethylene oxide molecules, it behaves like a nonionic compound. Ask for Bulletin L-25, which describes this Ethomeen and reveals some of its applications.

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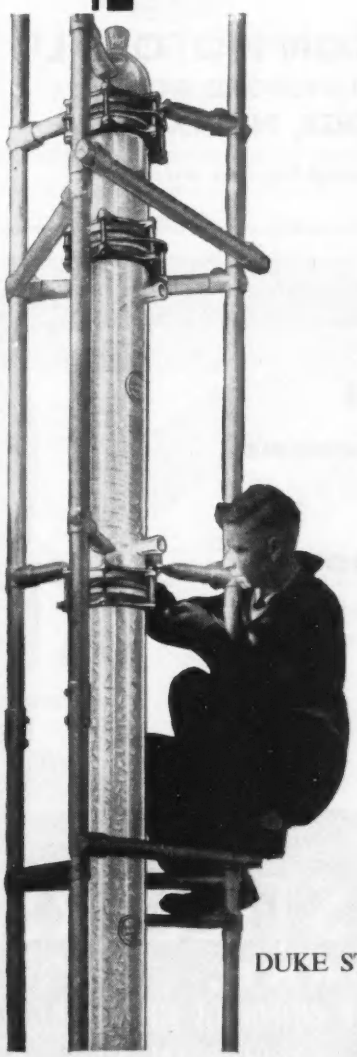

The Q.V.F. Erection Service has been developed to give our customers every possible assistance in both design and erection methods and ensures that Q.V.F. Industrial Glassware is put into service satisfactorily to function with a high degree of efficiency.

Q.V.F. Erectors have satisfactorily installed many complicated items of glass plant and many miles of pipeline; are capable of working without supervision and have received specialised training in erection methods which reduce installation costs to the minimum.

Write for your copy of our new folder "Q.V.F. ERECTION SERVICE" which gives full details.

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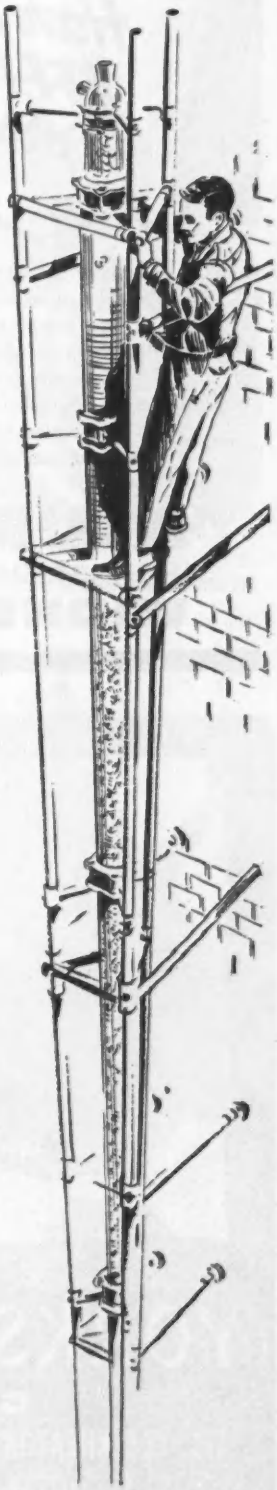

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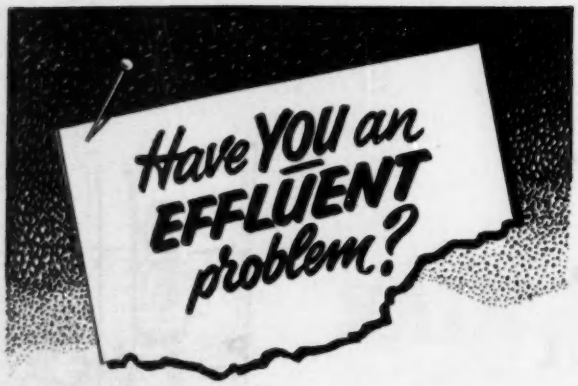

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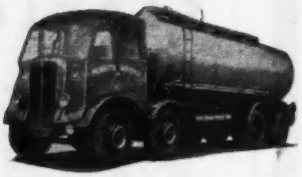

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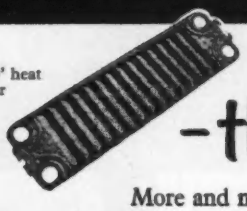
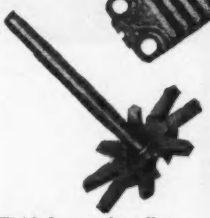
I.C.I. Titanium

Plate for 'Paraflow' heat exchanger



-the answer

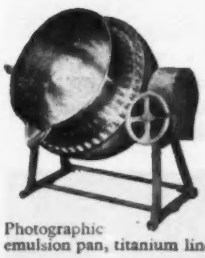
More and more, chemical engineers are turning to I.C.I. Titanium as the solution to some of their most harassing corrosion problems. Shown here are a few recent applications.



Welded pump impeller

Photos, by courtesy of: A.P.V. Co. Ltd. J. R. Bramah & Co. Ltd. Ilford Ltd. and H. Braithwaite & Co. Ltd. Marston Excelsior Ltd. Royal Dutch/Shell Group

Titanium-lined steel reactor vessel



Photographic emulsion pan, titanium lined

Condenser

Breeches piece for handling wet chlorine gas

Automatic pickle drum

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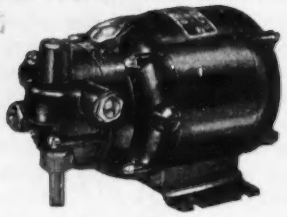

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R.P.M.	Torque	R.P.M.	Torque	R.P.M.	Torque	R.P.M.	Torque
600	10 oz. in.	37.5	4 lb. in.	216	4 oz. in.	13.5	24 oz. in.
300	16 oz. in.	25	4 lb. in.	108	7 oz. in.	9	30 oz. in.
150	24 oz. in.	18.8	4 lb. in.	54	10 oz. in.	6.7	35 oz. in.
100	32 oz. in.	12.5	4 lb. in.	36	12 oz. in.	4.5	44 oz. in.
75	36 oz. in.	9.4	4 lb. in.	27	15 oz. in.	3.35	3 lb. in.
50	3 lb. in.	6.25	4 lb. in.	18	20 oz. in.	2.25	4 lb. in.

VARIABLE SPEED GEARED MOTOR—Type 'KQ'				CAPACITOR INDUCTION GEARED MOTOR—Type 'N'			
R.P.M.	Torque	R.P.M.	Torque	R.P.M.	Torque	R.P.M.	Torque
200-600	9 oz. in.	12-37.5	4 lb. in.	456	8 oz. in.	28.5	3 lb. in.
100-300	16 oz. in.	8-22	4 lb. in.	228	13 oz. in.	19	4 lb. in.
50-150	20 oz. in.	6-16.5	4 lb. in.	114	21 oz. in.	14.2	4 lb. in.
32-100	32 oz. in.	4-11	4 lb. in.	76	26 oz. in.	9.5	4 lb. in.
25- 75	40 oz. in.	3- 8.25	4 lb. in.	57	32 oz. in.	7.1	4 lb. in.
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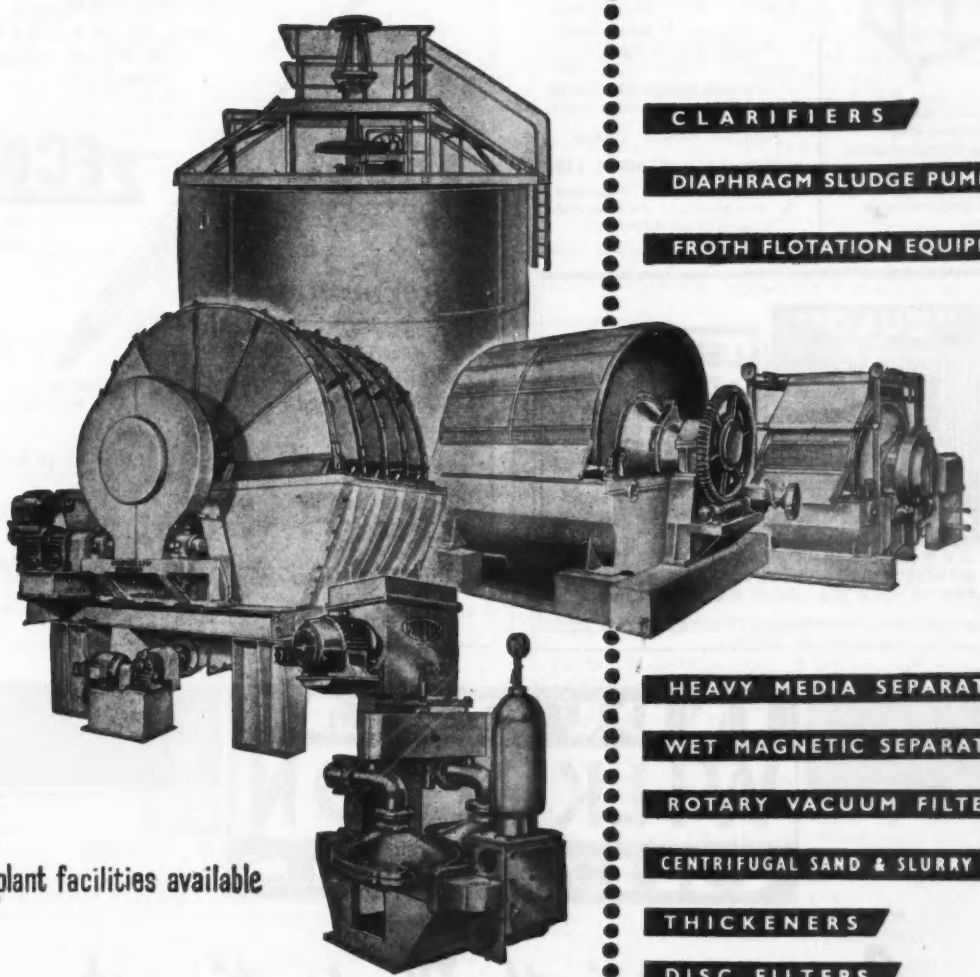

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Model 522, 36" x 24" x 24" approx. List 257s. 6d. each
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100 gall. model preparation
Steel holders and frame extra

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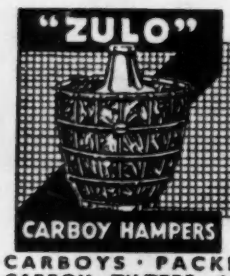

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THREE—1,352 c.f.m. HICK HARGREAVES 10 p.s.i. with 70 h.p. motors. 400/3/50. 510 c.f.m. BELLISS & MORCOM 30 p.s.i. with LAURENCE SCOTT 50 h.p. motor 440/3/50.

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TWO 48″ dia. Stainless Steel basket overdriven Centrifuges by by Watson Laidlaw with rubber covered monitor casing.
TWO Unused 30 gal. Stainless Steel Jacketed Tilting Mixing Pans by Brierley.
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THREE Stainless Steel Jacketed Tilting Mixers, 40″ dia. x 32″ deep with hemispherical bottom.
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Several s.s. **COILS** from 2 ft. to 7 ft. dia.
Assortment of s.s. **VALVES, PLUG COCKS** etc., from ½ in. to 3 in.
Quantity of s.s. **TUBING** and s.s. **FLANGES.**
All above second hand and in good condition.

NEW UNITS in stainless or mild steel made to requirements.
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'MORWARD' 'U' shaped **TROUGH MIXERS** with or without jackets.
TANKS, CYLINDERS, RECEIVERS, PRESSURE VESSELS and **AUTOCLAVES.**
Stirring gear can be fitted to any vessels.
New **PORTABLE STIRRING UNITS** with clamp-on attachment to requirements.

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Filter Presses: 48-36 in. sq. plates, 30-25 in, 24-25 in., 17-18 in. and 6 chambers 12 in. sq.
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NEW S.S. Jac. Pans 20 in. by 17 in., 45 w.p.
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Please write in the first instance, giving details of age, qualifications and experience to the Personnel Manager.

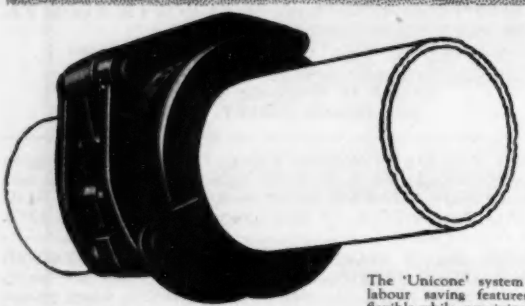
AT THE S. L. I. ANNUAL MEETING IN GLASGOW

At the Glasgow Section reception on Monday; Left: Dr. and Mrs. James Craik receive Sir Robert Robinson, president (right). Centre: E-J. Solvay (Solvay et Cie), president for 1959-60; Right: J. E. Dolan (I.C.I., Ardeer), left, with L. H. C. Hawkins (British Hydrocarbon Chemicals).

G. King (Albright & Wilson, Oldbury), left, with Col. F. M. Potter (Scottish Tar Distillers). For report of S.C.I. annual meeting see p. 31.

Left: Dr. E. E. Turtle (Ministry of Agriculture), left, with Dr. J. Allan (Cooper Technical Bureau). Centre: Dr. A. C. Hutchison (I.C.I., Ardeer), left, with J. W. Hutcheson (Trinoil (U.K.)), London affiliate of Texaco. Right: Dr. Francis H. Carr, left, Society Medallist, 1959, with his daughter, Dr. M. Gunther, and J. Muil Leitch, hon. secretary, Glasgow Section.

INSTANTANEOUS! JOINTS



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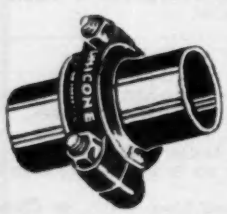

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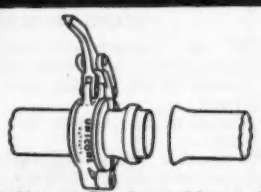
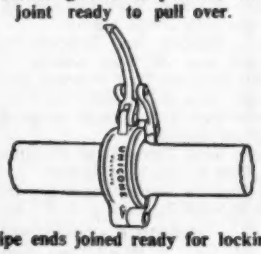
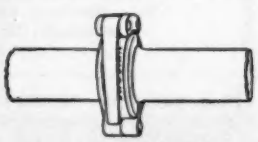


Rubber gasket in position and joint ready to pull over.



Pipe ends joined ready for locking.



The completed joint.

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Chemical Age

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Vol.81 CHEMICAL AGE NEWSLETTER 11 July 1959
No.2086 P.29

The printing trade dispute, in which Chemical Age is not directly involved, continues to preclude normal publication. This emergency edition summarises the news of the week.

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v v
v VIEWPOINT v
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U.K. SULPHUR. U.K. sulphur consumption in all forms in 1958 totalled 1,078,000 tons, a drop of 67,000 tons. Fall in demand has resulted from reverses in textiles, fertilisers and steel and from the cut in industrial activity up to the autumn of 1958 ('Sulphur', No. 24, 1959). Production of sulphur in all forms totalled 577,000 tons, ½% more than in 1957. Anhydrite output is estimated at 1.7 m. tons, a record. Brimstone recovery has expanded and in general sulphur recovery capacity at end-1958 was about 8,000 tons/year. Recovered sulphur is now finding a growing outlet for sulphuric acid, due to its economic transport in liquid form (F.W.Berk handle practically all the U.K. recovered sulphur).

Brimstone imports totalled 328,439 tons, 2,727 tons up on 1957, valued at £3¾ m. (average £11 7s.6d. per ton). Pyrites imports, at 245,123 tons, showed a cut of 11,700 tons (31%). Demand for brimstone was reasonably well maintained. Anhydrite consumption for sulphuric rose to the record level of 749,000 tons (up by 2%). Spent oxide (equivalent of about 116,000 tons S) usage declined to its lowest level since 1953 due to a cut in output of ammonium sulphate. Sulphur content of zinc concentrates consumed, at 45,600 tons, was 4% lower. Drop in pyrites usage continues and was 328,000 tons, 10% down on 1957.

Sulphuric acid output reached 2,241,100 tons (100%), a drop of 94,800 tons; consumption totalled 2,268,000 tons (100%), a drop of 103,000 tons and the first since 1952. Increased industrial activity should lead to a higher sulphur usage in 1959 for sulphuric. An output of 2.4 m. tons (100%) is estimated, the rise being met by greater use of brimstone. In 1959 the U.K. may become the world's largest single sulphur importer.

Utilisation of by-product hydrogen sulphide in the coal gas industry (the Appleby Frodingham fluidised bed ferric oxide desulphurisation plant and the Benfield process), are growing in importance.

POLYPROPYLENE FILM U.S. experts are cautious about polypropylene film. It has been difficult to estimate the potential and little experimentation or development has been done by extruders or end users. Main properties of the film - high heat and grease resistance - are seen as being in demand in relatively small markets, until price is competitive. View of the U.S. packaging film trade is that more development is needed before polypropylene becomes important.

Polythene sales are expected to be over 100 m. lb. in 1959, with film for packaging at 190 m. lb. Fresh outlets represent nearly 40% of the U.S. market. By 1964, use is expected to be doubled.

DISTILLATES

Reader response to the first emergency edition of Chemical Age was swift. All the comments I have received have been appreciative and the first to reach my desk was a letter pointing out the aptness of the headline to the A.P.V. Co's front cover advertisement. This read "An outstanding development in evaporation".

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An interesting feature of the Salon de Chimie in Paris were the papers on chemical market research. One author was as bold as to suggest that executives in the European chemical industry do not work as hard as their U.S. counterparts. This introduced a note of controversy in an otherwise peaceful meeting. Next speaker, also an American, was constrained to tear up his prepared paper and to deliver a 30 minute homily on the need for visitors to adjust their thinking to the traditions and customs of the country they visit. Sound advice to visitors to any country, particularly if they expect to do business there.

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As I have noted before, chlorinated cyanuric acid is a product that should have a good future in the U.K. Last week (p. 9) we stated that commercial quantities are now available from the Willow Island plant of American Cyanamid. With a process based on urea, Cyanamid produce an acid with a 98% minimum cyanuric acid content; 2% max. of ammelide; 0.5% max. of ammonium sulphate, and 0.5% max. of water. Chlorination is the tricky part of the process and during this stage under either acid or alkaline conditions, cyanuric acid is subject to hydrolysis. Exact mechanism of the hydrolysis or the nature of the intermediates involved is not completely understood, but improper chlorinating proceedures can result in formation of hazardous amounts of nitrogen trichloride. Cyanamid have obviously minimised the potential hazard of this reaction. The di- and trichloroisocyanuric compounds contain up to 71% & 91.6% available chlorine respectively. It is perhaps surprising that the large detergent producers in the U.K. have not so far shown much interest in the product.

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Warren Spring Laboratory of DSIR provides a vital addition to chemical engineering research facilities in the U.K. Not only will it carry out experiments; it is itself an experiment. The laboratory will be willing to carry out contract research for industry and Lord Hailsham told me at the opening last week that a statement on this would be made shortly in Parliament. An approach is to be made to the local committees of the Association of British Chemical Manufacturers to discuss the type of sponsored work that industry is likely to want. Some work is to be done on distillation techniques at the request of the joint A.B.C.M.- British Chemical Plant Manufacturers' Association panel on distillation.

The decision to continue at Stevenage the former Fuel Research Station's work on the Fischer-Tropsch slurry process was taken at the request of the Ministry of Power. In the slurry technique, the gas mixture is passed through a suspension of powdered catalyst in molten wax at between 250 and 300°C and at pressures between 5 and 30 atmos. One of the objects of the work is to develop an iron catalyst of longer life and higher activity than those now available and one that will yield a high proportion of desired end-products. Irradiation of catalyst appears to hold good promise and a cobalt 60 source (about 400 curies) is being used. Chemical by-products will include: fatty alcohols (methyl, ethyl, etc.) corresponding fatty acids, organic esters, ketones & aldehydes.

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S.C.I. ANNUAL MEETING. Annual meeting of the Society of Chemical Industry opened at the Royal College of Science and Technology, Glasgow on Tuesday this week with an attendance of more than 420 members and guests, of whom over 240 were members. Following a reception on Monday, when they were welcomed by Dr. James Graik, chairman of both the Section and I.C.I. Nobel Division, and Mrs. Graik, they were welcomed on Tuesday morning by the Lord Provost of Glasgow.

Papers were given by: Prof. J. Hawthorn, Glasgow (Food, fallout & the isotopes of strontium); Dr. F. H. Carr, 1959 Society Medallist (Autonomy & automation in chemical industry); Detective Chief Inspector J. K. McLellan, City of Glasgow Police (Chemistry and police investigation); Dr. H. Baines, Kodak (Photography in industry).

Works visits included I.C.I. Dyestuffs, Grangemouth; B.P. Refinery; & British Hydrocarbon Chemicals (both Grangemouth); Boots, Airdrie; Hannah Dairy Research Institute; D.S.I.R. Thorntonhall & East Kilbride; Organon Laboratories; R.&J. Garroway; Clyde Oil Extracting; Scottish Gas Board, Dumbarton; D.C.L. Glenochil Research Station; British Oil & Cake Mills.

A Civic Reception was held at Glasgow City Chambers on Tuesday evening and the annual dinner was held on Wednesday.

Officers. President, Ernest-John Solvay (Solvay et Cie, Brussels) in succession to Sir Robert Robinson; hon. treas., Dr. E. B. Hughes (J. Lyons & Co.); hon. foreign sec., E. L. Streatfield (Houseman & Thompson); hon. home sec., Dr. H. K. Cameron (General Electric) hon. publications sec., Prof. W.G. Overend (Birkbeck College); members of council; Dr. H. Baines (Kodak); J. H. Bennitt (Bakelite); F.J.Bolton (J.F. MacFarlan); G. Brearley (A.B.C.M.); Dr.R.T.Colgate (Huntley & Palmer); Sir Charles Dodds (Courtauld Institute); G. Dring (Bakelite); Dr. R.A.E.Galley (Tropical Products Institute); C.S. Garland (London); Dr. L.A. Jordan (Surbiton); H.A. Thomas (Courtaulds); and N.C. Wright (Min. of Agric.).

For Chemical Age photographs of the Glasgow Section reception on Monday, see p. 28 of this issue.

LATE NEWS

From Overseas. Sogemines, Montreal, an associate of the Soc. General de Belgique, are to start this summer building a $17 m. plant at Maitland, Ont., on the St. Lawrence, for the production of ammonium nitrate, nitrogen solutions, anhydrous ammonia and hydrogen. The last two products will be supplied by du Pont of Canada, Maitland.

Under a licence agreement with Reichhold Chemicals Inc., Probst & Cia, Medellin, Colombia, a subsidiary of W.R. Grace, are to expand their facilities and begin production of various synthetic resins, using techniques and formulae developed by Reichhold.

Commercial. Bowmans Chemicals are to repeat their interim of 4%.

In volume, Hardman & Holden, Manchester, sold almost exactly the same total tonnage of chemicals and prussian blue pigments as in the previous year, says Mr. K. G. Holden, chairman. Price cuts, however, caused a fall of about 4% in turnover compared with the previous year, which was a record one.

NEW MELINEX PLANT. I.C.I. Plastics Division will have in full production by 1960/61 a plant for the manufacture of Melinex polyester film. With an eventual capacity of 2,000 tons or more a year, the plant is to be built near Dumfries. Designed by I.C.I. engineers, the plant will house 'some of the most elaborate and ingenious plastics machinery in use to-day'. Only U.K. Melinex now available comes from I.C.I's. pilot plant at Welwyn. The Dumfries plant should satisfy home needs, eliminate imports and provide an export surplus. I.C.I. have sold manufacturing 'know-how' to a number of large firms throughout the world in the past few years. Future of Melinex is seen to be most promising, despite the cost factor, as the material differs radically from other packaging films in every property.

BEECHAM PENICILLINS. Mr. H.G. Lazell, chairman of Beecham's, says that four of the new penicillins to be produced by chemical synthesis, may be on the market within the next 18 months. It would not be until after then that the new development would begin to earn significant profits.

EUROPEAN PIPELINE. Societe du Pipeline Sud-Europeen has now applied for permission to build a pipeline from the Mediterranean to the upper Rhine. 19 oil firms from 6 countries (France, U.K., Holland, Belgium, W. Germany and the U.S.) took part in the preliminary studies. Annual throughput will be 25 m. tons; initial expenses will be between £39.6 m. and £43.2 m. It is hoped to complete work by 1962.

POWER-GAS COMPLETE PLANT. Erection of a Power-Gas/Hercules reforming plant has been completed at Kali-Chemie A.G., Hanover. This unit, which is similar to others erected in the U.K., is based on liquid hydrocarbon feedstock and comprises a tubular cracking furnace followed by carbon monoxide conversion, carbon dioxide removal and methanation stage for very high purity oxygen.

WEEDKILLER TRAIN. A new train, designed to spray chemical weedkiller on railway tracks has come into service on Western Region. The train is the third to be built since the war by Chipman Chemical Co. Ltd., 2, Caxton St., London, S.W.1. Weedkiller is carried in four tank wagons, each with a capacity of about 4,750 gall. Optimum spraying speed is 20 m.p.h., when the solution is delivered at the rate of about 93 g.p.m.

METHANE SHIPMENTS. Two trial shipments of liquid methane have been landed, Mr. R. Maudling, Paymaster General, reported in answer to questions in the Commons. Much of the methane had been used, he said, and safety was receiving 'paramount consideration at all stages of the experiment.'

MARGAM'S BENZOLE PLANT. Margam Benzole Co. has been formed to erect and operate plant to distil crude benzole obtained from the Steel Co. of Wales coke-oven plants at Port Talbot by the most modern hydrorefining process. Sir Julian Pode, managing director of the Steel Co. of Wales, is chairman of the new company.

SHELL POLYPROPYLENE. The Shell Chemical Co. announce that polypropylene is now available in the U.K. in a variety of colours in commercial quantities for moulding and extrusion at a cost of about 3s 9d lb. As a result of further developments in the Ziegler process Shell are extending their range of high-density polythene with the introduction of Carlona 900.

£360,000 CONTRACT. A £360,000 contract for a five-storey research block for I.C.I.'s paint division at Slough has been given to Holland & Hannen and Cubitts (Great Britain).

COPPER SULPHATE OUTPUT. Overproduction of copper sulphate in the world and consequent uneconomic prices have forced McKechnie Bros. Ltd., Widnes, to restrict production from August, when 40 workmen and a number of staff will be discharged.

SINTER PLANT CONTRACT. Huntington, Heberlein & Co. Ltd., a subsidiary of Simon-Carves Ltd., are to build a large sinter plant for Richard Thomas & Baldwins Ltd. with a capacity of 16,000 tons a week from each of two continuous sintering machines.

ASPRO ACQUISITION. Aspro-Nicholas have acquired the capital of Askit Ltd., proprietors of Askit powders, for £545,000. Development is to be accelerated in a wider market.

W.J. BUSH. Final of 12% (11%) making 14% (13%) is declared by W.J. Bush. A scrip issue of one-for-three is to be made. Group net profits were £313,643.

IMPORT DUTY EXEMPTION. The Treasury have made the Import Duties (Temporary Exemptions) (No.6) Order 1959, extending from 1 July to 1 October 1959 the temporary exemption from import duty of the goods shown under tariff headings of chapters 28, 29, 30 and 39 of Chemical Products Customs Tariff 1959. The order is published as Statutory Instruments 1959, No. 1113.

NON-INFLAMMABLE POLYESTER RESINS. Polyester resins giving a high degree of non-inflammability without impairment of other properties such as electrical resistance and durability -- Hetron resins -- based on het acid, have been developed in the U.S. by Hooker Chemical Corporation and are now being sold in Europe together with the het acid under an exclusive licence by the Organic Chemicals Dept., Albright and Wilson (Mfg) Ltd. British resin manufacturers will now be able to produce the Hetron resins and fabricators to make the finished products under licence from Albright and Wilson although the latter will also continue to supply the resins.

In the U.S. Hetron resins, although more expensive than 'standard' polyesters (upwards of 5s/lb.) had in 1958 captured 10% of the total market. If demand in the U.K. and Western Europe indicates it A. & W. may well build a plant in the U.K. to manufacture het acid. To justify it the new resins would have to take about 12% of the polyester resin market.

Het acid (C.A. 8 Nov.58 p.752, 28 Mar 59 p.543) is chemically 1,4,5,6,7,7-hexachlorobicyclo-(2,2,1)-5 - heptene - 2,3-dicarboxylic acid (or hexachloroendomethylene tetrahydrophthalic acid or chlorendic acid.) This crystalline substance will undergo reactions typical of a dibasic acid such as phthalic anhydride. It is unique, however, among dibasic acids in possessing over 54% of its weight of stable chlorine, making it useful for imparting flame resistance to resinous products.

NITROGEN PRODUCTION UP. Nitrogen production at Staatsmijnen, in Limburg, in 1958 totalled 205,000 tonnes, 3% more than in 1957. Fertiliser production increased 2% to 919,000 tonnes (about 198,000 tonnes pure nitrogen.) Urea capacity is being doubled and new plant will produce 100,000 tonnes a year Process efficiency has led to increased production of sulphuric acid and potassium ferrocyanide. Preparation of alcohol and ether were maintained at almost the same high level reached in 1957; total output was 78,000 hectolitres (100%).

COLD BOX INSTALLATION. Introduction of the Philips coldbox installation, believed to be the first of its kind in the world, is announced by Research & Control Instruments Ltd., 207 King's Cross Road, London, W.C.1. With a net content of about 400 litres for temperatures down to -160°C, it has a refrigerating capacity of 4400 BTU/hr at -100°C and 2560 BTU/hr at -160°C. Extra devices enable the production of liquid air

GERMAN CHEMICAL EXPORTS In Jan. - March 1959 West German chemical exports were worth DM 1,200 m (£100 m) an increase of 7% over the same period of 1958. The share of the chemical industry in total W. German exports rose from 13 to 14%. Some 26% of all chemical products were exported. The U.K., Austria and Switzerland were among countries increasing their purchases and Italy has become Germany's best customer for the first time. Sales to European buyers rose 3.7% to form 64% of all sales. While general imports fell chemical imports rose by 5.5% to DM 428 m (£35.7 m,). Imports of photochemical products rose by 34%, tar dyestuffs 33%.

net profits were £313,643.

ACRYLONITRILE PATENT. British Patent 814,238, assigned to Knapsack-Griesheim and published 3 June, describes a process for simultaneous manufacture of acrylonitrile, monovinyl acetylene and acetaldehyde (see C.A. 9 August, 1958, pp. 218 & 226). This preparation of acrylonitrile avoids the disadvantages of secondary products resulting from reactions of monovinyl acetylene & acetaldehyde with hydrocyanic acid, such as cyanbutadiene, and lactic acid nitrile, and the difficult separation of the latter from cyanbutadiene. At the same time, the process yields large quantities of acrylonitrile and monovinyl acetylene, calculated on the total amount of acetylene transformed and the total quantity of HCN employed, while allowing almost complete recovery of the acetaldehyde, normally lost by reaction with HCN to give lactic acid nitrile.

Essentially, acetylene and HCN are introduced into an aqueous solution of cuprous chloride containing hydrochloric acid under a pressure of substantially 1 to 4 atmos. abs. and at about 70°C to 110°C, the aqueous solution containing in the dissolved state ammonium chloride, sodium chloride and/or potassium chloride. To obtain simultaneously monovinyl acetylene and acetaldehyde, about 50 to 103% of HCN is used calculated on the basis that 100% would be the quantity converted into acrylonitrile when employing a large excess of HCN i.e. more than 103%, under corresponding reaction conditions. Generally, partial pressures of acetylene of about 1 to 3.5 atmos.abs. (0 to 2.5 atmos.gauge) & reaction temperatures of about 80°C to 90°C are used. The desired proportions of acrylontrile formed to monovinyl acetylene formed can be controlled by adjusting the quantity of HCN added within the limits defined above.

Basis of the present invention lies in the discovery and appreciation of the fact that to avoid undesirable side reactions in the course of formation of acrylonitrile, there is introduced - in addition to a large surplus of acetylene - a quantity of HCN as is transformed into acrylonitrile under the desired reaction conditions.

When only monovinyl acetylene is prepared by introducing only acetylene into the contact solution, yield of divinyl acetylene amounts to about 15% of monovinyl acetylene formed, while in simultaneously obtaining acrylonitrile and monovinyl acetylene, yield of divinyl acetylene only amounts to about 2% of monovinyl acetylene.

Simultaneous preparation of acrylonitrile and monovinyl acetylene has the following advantages, compared with preparation of acrylonitrile and monovinyl acetylene in separate reactors and by separate processes; Increased yield of acrylonitrile calculated on quantity of HCN used; possibility of simultaneously obtaining acetaldehyde by eliminating formation of undesirable lactic acid nitrile; increase in yield of acetylene which is converted into monovinyl acetylene, calculated on the amount of acetylene used; reduction in installation and energy costs as a result of simplification of the apparatus, since smaller amounts of the contact solution and, therefore, smaller reaction vessels, are required; yield per unit of space and time is increased.

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NEW WIDNES PLANT? Annual report of the Lancashire and Merseyside Industrial Development Association states that negotiations are in hand with a chemical producer who is considering a site at Widnes.

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GAS CHROMATOGRAPHY. The third symposium on gas chromatography, to be held at the Assembly Rooms, Edinburgh, on 8, 9 and 10 June 1960, will be held by the Society for Analytical Chemistry and the Gas Chromatography Discussion Group under the auspices of the Hydrocarbon Research Group, Institute of Petroleum. Details from L. Brealey, Boots Pure Drug, Co., Nottingham.

PEOPLE IN THE NEWS

Dr. Reginald Bennett has been appointed acting chairman of the Parliamentary and Scientific Committee.

Mr. Robert H. Walsh has been appointed sales manager for synthetic rubber and other elastomeric products of the Du Pont Co. (United Kingdom) Ltd.

The following changes in the Mond Nickel Co. Ltd. and its subsidiary, Henry Wiggin and Co. Ltd. are announced: Mr. L.H. Cooper relinquishes his positions as chairman and director of Mond Nickel and Henry Wiggin. Mr. G. Archer becomes chairman of both companies. Three managing directors of Mond are appointed: Mr. I. A. Bailey (Operations), Dr. L.B. Pfeil (Research and Technical), Mr. J.O. Hitchcock (Commercial). Mr. Bailey continues as managing director of Wiggin and Dr.Pfeil and Mr. Hitchcock as directors of that company. Dr. A.G. Ramsay becomes a director of Wiggin and continues as director of Mond resident at Clydach, Swansea. Mr. F. Dickinson becomes a director of Mond and continues as manager of the development and research department of Mond.

Mr. L.A. Woodhead has been elected president of the Scientific Instrument Manufacturers' Assocn. Mr. G.C. Ottway becomes president elect.

Chief Inspector of Nuclear Installations under the new licensing and insurance provisions for atomic reactors will be Major General S.W. Joslin, who joined the Atomic Energy Authority in 1954.

Mr. J.A. Tallant has been appointed managing director, Phillips Carbon Black Co. Ltd.

Mr. W.W. Dolton has been elected president of the Brit. Non-Ferrous Metals Fed. A new Vice-president is Mr. C.H.M. Holden.

Mr. Douglas Dickenson and Mr. George Peryer have been appointed to the board of Joseph Weil and Son Ltd.

Mr. E. H. Curtis has been appointed general manager of Carbide Industries, a member of the British Oxygen group.

OBITUARY.

Mr. L.K. Everitt, a director of Edgar Allen & Co. Ltd., and general manager of the steel department, while on a visit to the subsidiary company, Acieries d'Hirson in Paris.

On 2 July, aged 82, Lord Weir, honorary president Weir Group, former director International Nickel, I.C.I. and Shell Transport and Trading Co., Director-General of Explosives 1939-41.

TRADE NOTES

Borax Price Changes. Prices of borax and boric acid are to go up from 17 August, Borax Consolidated announce. The increase will range from £1 to £2. 10. 0 a ton (about 10%). New price for the cheapest type of borax in paper bags will be £46 a ton, against £45 at present. The dearest type of boric acid in hessian sacks will cost £2 10s a ton more at £98. 10s.

New Office. Victor Wolfe Ltd. have opened a new office in London at 130-132 Cromwell Road, S.W.7.

Change of address. The only address of B. Newton Maine Ltd., specialists in rare chemicals, particularly substances produced by high-pressure hydrogenation, is now Silsoe, Beds, (Silsoe 26).

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"OVERSEAS NEWS."

S.AFRICAN URANIUM PRODUCTION

At short notice S.African mines could expand their annual production of uranium oxide by 1,000 tons, which could be substantially increased with due notice and favourable market conditions, Mr. P.H. Anderson stated to the Transvaal and Orange Free State Chamber of Mines. In 1958 S.Africa produced about 6,250 tons of uranium. Canada produced 13,500 tons, expected to rise this year to 15,000. U.S. output is expected to reach 15,000 tons.

PROMISE OF ZIRCONIA With its melting point of 4850°F Zirconia (ZrO_2) is reported as one of the most promising materials for high temperature applications by B.C. Weber and M.A. Schwartz, Aero-nautical Research Lab., Wright Air Development Centre, U.S.A.F. (Order PB 151665 O.T.S., U.S. Dept. of Commerce, Washington 25 DC, $1). In addition to being one of the most stable of the refractory oxides, its properties include corrosion resistance, high strength, hardness and high thermal conductivity. Usefulness of zirconia is said now to be dependent on controlling its crystallographic transformation. The report also describes advances in 'metal-modified oxides' (MMO), a new class of materials prepared by addition of small amounts of refractory metals to the oxides.

FATTY ACID AS LUBRICANTS. Among patents released for public use by the U.S. A.E.C. is U.S. Pat.2,870,031 granted to T.M. Benziger, which reports the use of fatty acids as graphite extrusion lubricants. Previously graphite mixtures have been composed of coke or carbon black with a carbonaceous binder such as coal-tar pitch and a lubricant such as petrolatum or a colloidal suspension of graphite in glycerine or oil. Since such a lubricant is not soluble in, or compatible with, binder liquid, such mixtures were difficult to extrude and the formed pieces lacked strength. Fatty acids, however, are soluble in the binder liquid and give definite improvements.

SOHIO CHEMICALS' ACRYLONITRILE PROCESS This (C.A. 7 Mar.p.407) is based on a single-step catalytic vapour-phase reaction. Propylene, ammonia and air are reacted below 500°C at pressure less than three atmos. over a catalyst (nature undisclosed.) Main product is acrylonitrile and some acetonitrile and HCN. Catalyst is used as a fluidised bed and is said to be durable, depending on high concentration rather than trace amounts for activity. The Sohio multi-million dollar plant at Lima, Ohio, is due on stream early in 1960. Refinery propylene and fertiliser grade anhydrous ammonia will be the starting materials. Propylene cone. is not critical (between 40 and 90%.) Air provides the necessary oxygen. Stoichiometric amounts of ammonia and oxygen are used. CO and CO_2 are also produced to form main unusable by-products. Propane and ethylene are inert under the specified reaction conditions but butylene and some higher hydrocarbons will react and thus have to be removed from feed streams. Product recovery and purification are stated to be comparatively simple. Fixed gases go to a stack or recovery plant. Acrylonitrile is finished by drying and distilling. By-product acetonitrile is similarly cleaned up. The HCN can also be processed. Economic advantages are: small plants can be competitive with bigger ones using older processes and integrated with HCN and acetylene or ethylene oxide production; easily transported raw materials; conventional constructional materials; catalyst can be made locally.

PRODUCTION OF RHENIUM. First U.S. commercial production of rhenium rod, wire and strip is announced by Chase Brass & Copper Co., a subsidiary of Kennecott Copper. It is produced through powder metallurgy. Purified NH_4ReO_4, a by-product of molybdenum sulphide is reduced by hydrogen to rhenium powder and pressed into bars at 25-30 tons p.s.i. These bars, with theoretical density of about 45% are then presintered at 1200°C (5000°F). Final density ranges from 90 to 96% of theoretical density. With melting point of 5756°F, surpassed only by tungsten and non-metal carbon, rhenium finds its most important present applications in the highly critical measurement and control aspects of high-temperature technology.

PLASTICS LIGHT CHAINS. Chains of plastics material reinforced with glass fibres, having a specific weight of 1.8 kg./cu. decametre for light fittings are being made by Kettenwerke Schlieper GmbH, Grune, Westphalia. The chains are for use in chemical and other industrial plant and have a high resistance to corrosion from acids, salts, etc. and good electrical and heat insulating properties.

MISSILE FUELS. The Celanese Corp. are to acquire a plant at Ashville, N.Carolina, for development and eventual production of high-energy fuels for missiles. It will be owned and operated by Amcel Propulsion Inc., in which Celanese have a controlling interest.

U.S. LINK FOR KALI-CHEMIE. This Hanover, W.Germany, company has made an agreement with 'a leading U.S. chemical producer' and as from 1960 will produce jointly with the U.S. firm various inorganic chemicals for sale in Europe. In co-operation with a second U.S. concern, Kali-Chemie are to start production of a second platinum catalyst for mineral oil industry.

NEW ROUTE TO METHACRYLIC ACID. Escambia Chemical Inc.'s new route to methacrylic acid and methacrylates is going into commercial production from pilot plant. At the company's Pensacola plant a 500,000-lb.-a-year unit is scheduled for completion early in 1960. Escambia's process, covered by 8 patents, starts with oxidation of isobutylene with a nitric acid - nitrogen dioxide mixture giving hydroxyisobutyric acid (80% yields). Dehydration of hydroxyisobutyric acid gives 95% yields of methacrylic acid. Some of this acid will be esterified to methyl and higher methacrylates. The price is 30 cent/lb. against 45 cents-present selling price for tank carloads. Higher methacrylates will be made direct from the acid as distinct from present technology, where methyl methacrylate is used as the intermediate. About 86 lb. of acid goes as far as 100 lb. methyl methacrylate, Escambia say.

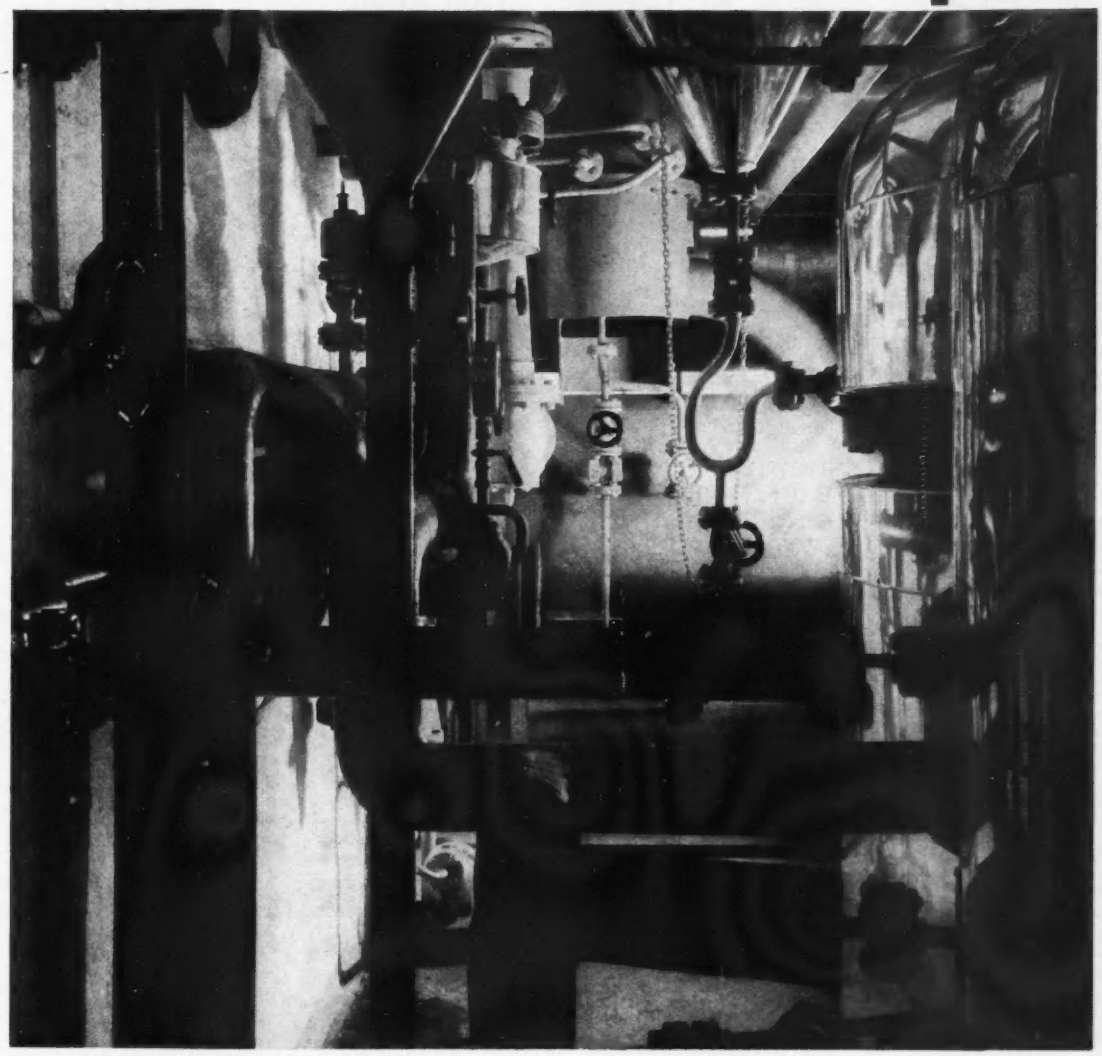
OVERSEAS BRIEFS

Polymerisation plant of Quimica Hoechst is now operating in Buenos Aires. It will produce the Mowilith compound of Farbwerke Hoechst AG, Frankfurt, for paints, lacquers, adhesives and other uses, as well as Appretan products for use as auxiliaries in the textile industry.

Port Elizabeth city council has given an option to Phillips Carbon Black (Pty) Ltd. on 25 acres to erect a £830,000 carbon black factory. The company is backed by the Industrial Development Corporation of S. Africa Ltd.

can be made locally.

Process Technique



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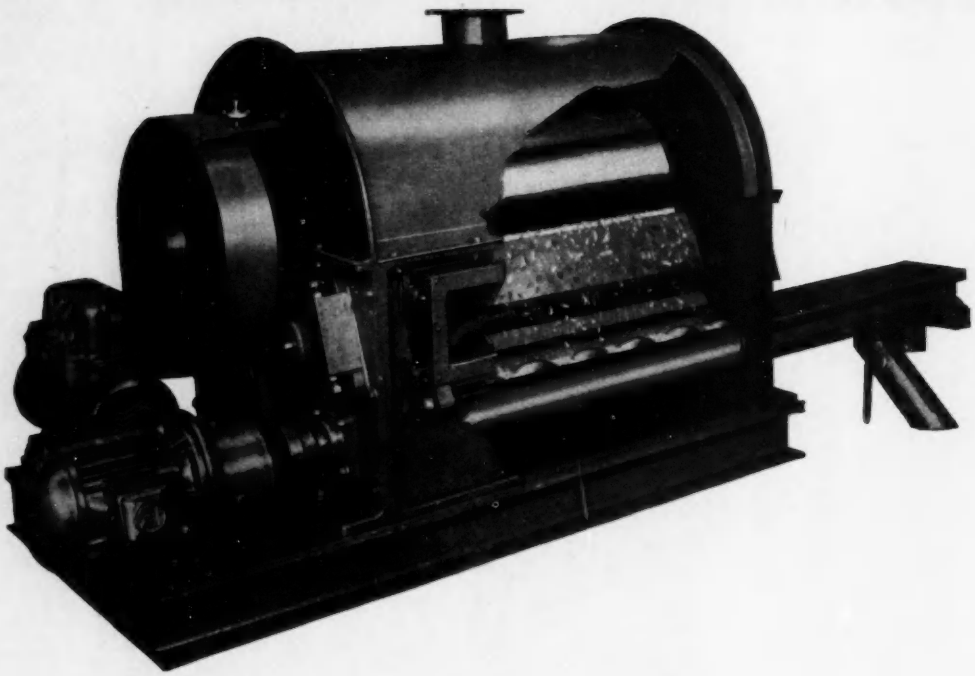

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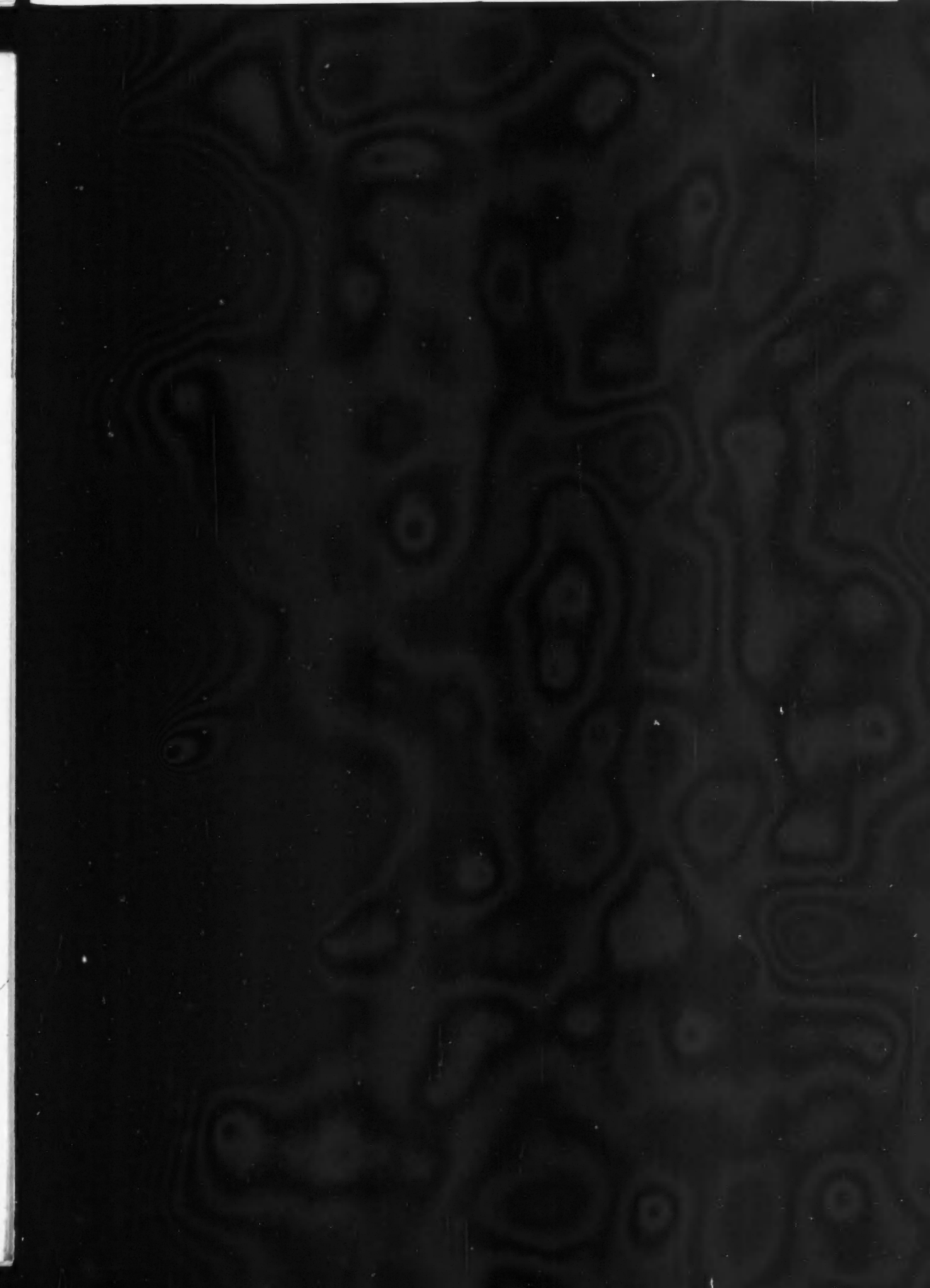
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